Seasonal Weather Brief (Spring/Summer Hazards)

OL-A, 18th Weather Squadron Updated 30 Jan 03

Overview

- Davison Army Airfield Climo
- Weather Warnings/Advisories
- Spring/Summer Weather Patterns
- Precipitation Types
- Seasonal Unique Aviation Hazards
- General Weather Information
- Online Flight Weather briefing Requests
- Space Weather Products

Davison AAF Climatology

•	APR M	AY JU	N JUL	AUG			
•	EXTRM MAX	X 96	9 7	100	104	105	
•	AVG MAX 65	5 73	85	89	86		
•	AVG MIN 49	54	63	3 70	6 7		
•	EXTRM MIN	19	29	38	45	44	
•	AVG PRECIP	3.2	3.8	3.5	3.9	4.2	
•	AVG SNOWF	FALL 0.1	0	0	0	0	
•	MAX SNOW	FALL	2.0	0	0	0	0
•	AVG RH (05)	L) 779	87%	90%	89%	89 %	
•	AVG RH (15)	L)	41%	46%	51%	53	%
	50%						
•	# TSTM DAY	rS 3	5	7	8	6	

Davison Wx Watches

(Summer Season)

- Tornadoes (4 hour desired lead time (DLT))
- Surface Wind GTE 50 knots (4 hour DLT)
- Hail (GTE 1/2 inch, 4 hour DLT)
- Freezing Precipitation (4 hour DLT)
- Heavy Snowfall (GTE 2 inches in 12 hours, 4 hour DLT)
- Lightning from Thunderstorms W/I 5nm (30 minute DLT)

Davison Wx Warnings

(Summer Season)

- Tornadoes
- Thunderstorms (Any Intensity)
- Surface Wind (35 50 knots)
- Surface Wind (> 50 knots)
- Heavy Rain (GTE 2 inches in 12 hours)
- Hail (GTE 1/2 inch)

Davison Wx Advisories

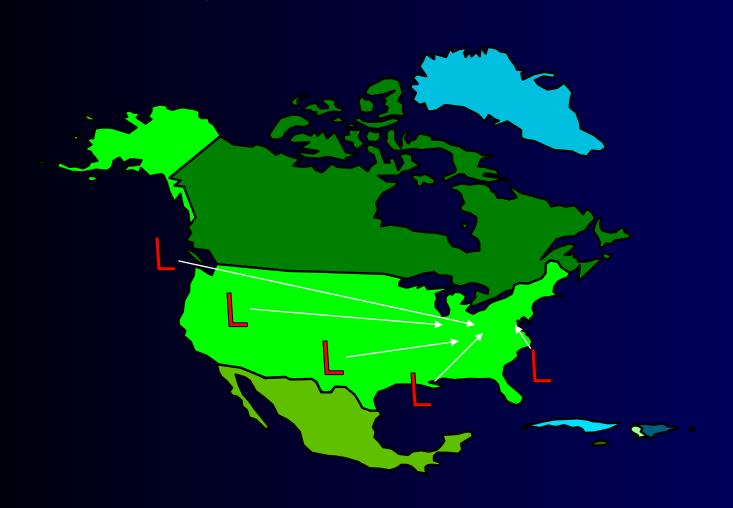
(Summer Season)

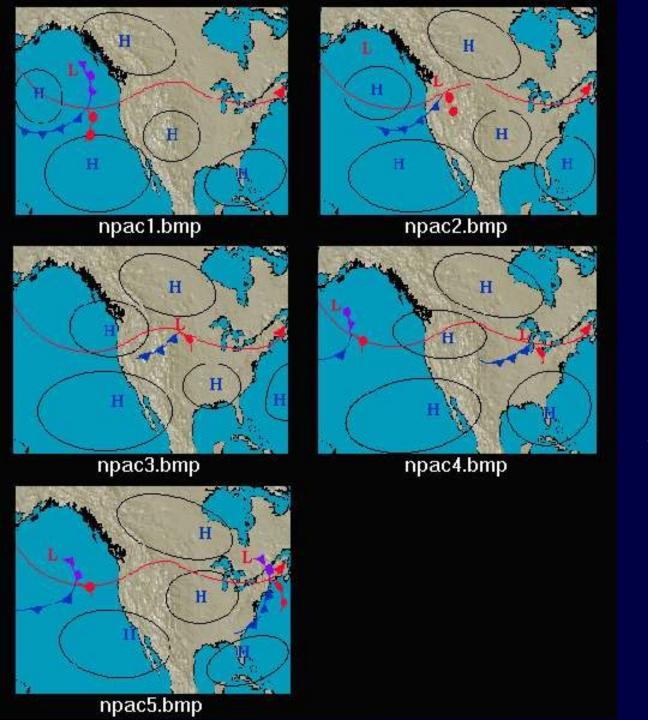
- Gust Spread (15 knots or greater)
- Crosswind (21 knots or greater)
- Surface Winds (30 knots or greater)
- Lightning observed W/I 5NM
- (LFA) LGT-MDT (or greater) below 10,000feet
- (LFA) Thunderstorms
- WBGT GTE 78F

Summer Weather, the pattern changes as the Bermuda High moves northwestward and dominates the circulation of air over the eastern United States. At this time, a flow of warm, moist air spreads over the area with winds from the southwesterly quadrant. This region is under the influence of the western quadrant of the Bermuda High. Subsidence is less and instability is greater. With the high relative humidity, only minor lifting is needed to start convective activity. Thunderstorm activity reaches its maximum in July. With the presence of moisture, cumulus clouds prevail during the day time and dissipate by sunset. The track for migratory low pressure systems moves far to the north. Summer is characterized by considerable warm weather including several hot, humid periods. The warmest weather occurs in late July. Haze becomes a significant visibility restrictor under a stationary high pressure area with no change in airmass for several days, the air in the lower 10,000 feet stagnates and the haze/polution dominates. Summertime frontal thunderstorms occur along the front with the movement of thunderstorms and precipitation through the base signaling frontal passage. With an inactive front, a squall line will precede the frontal zone by 2-4 hours. Frontal passage is identified by pressure tendency and humidity changes.

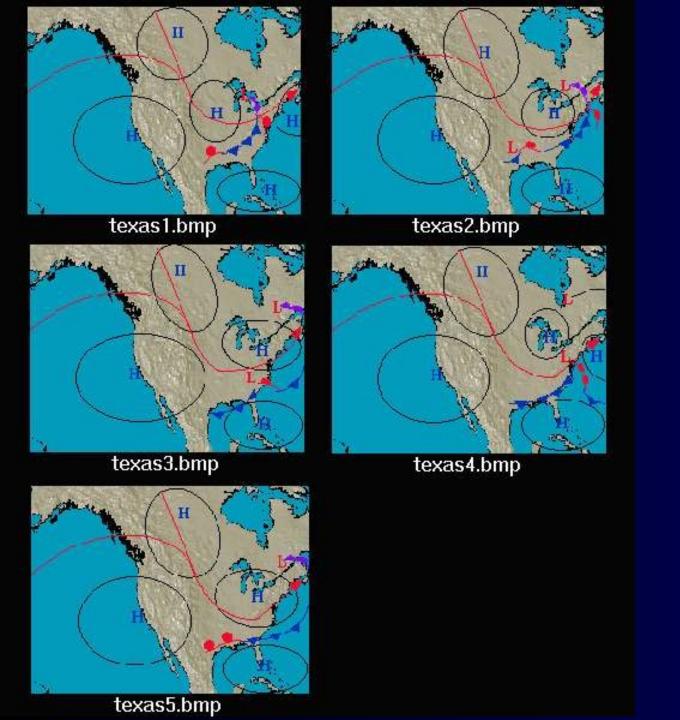
Summer Weather Patterns

(Typical Storm Tracks)

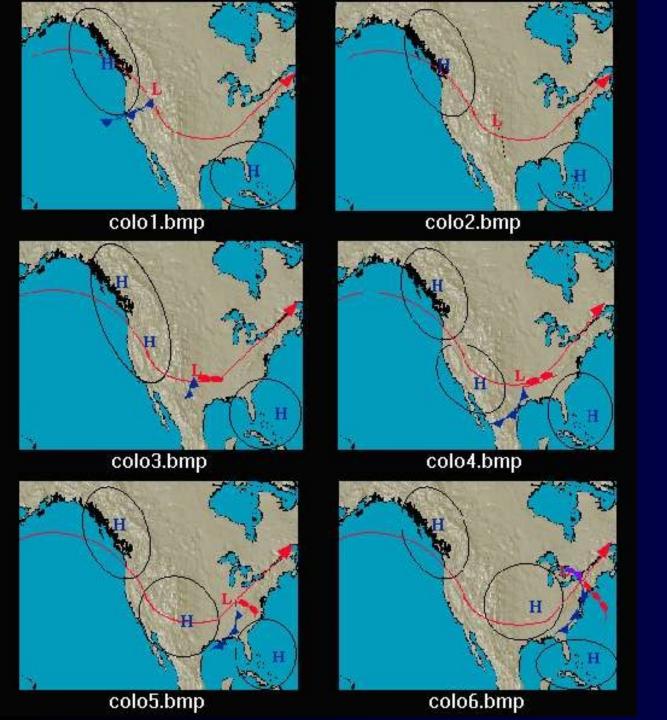




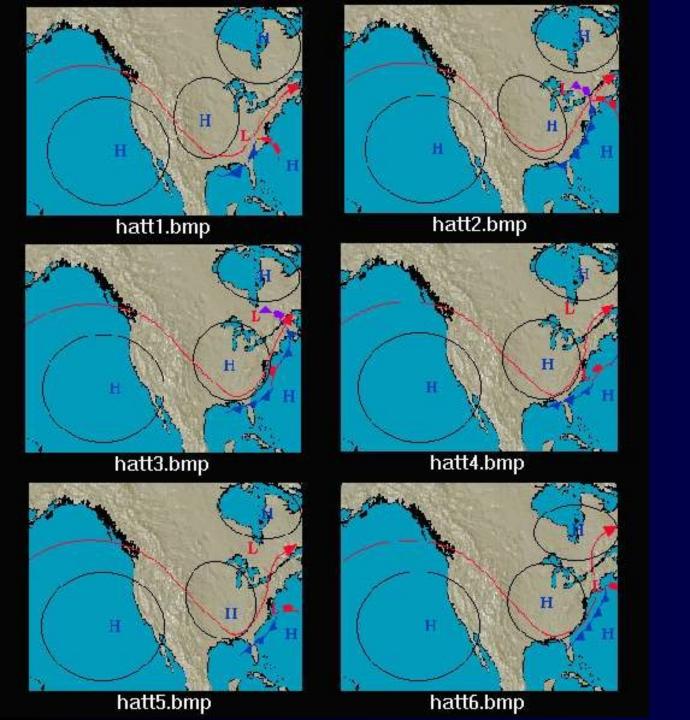
North pacific Low (Year around but Predominate Spring/Fall)



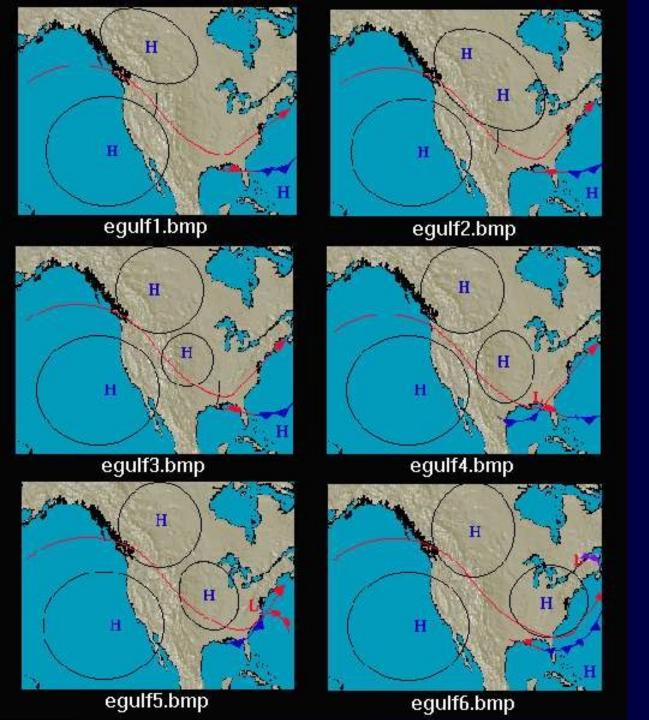
Texas Low (Spring)



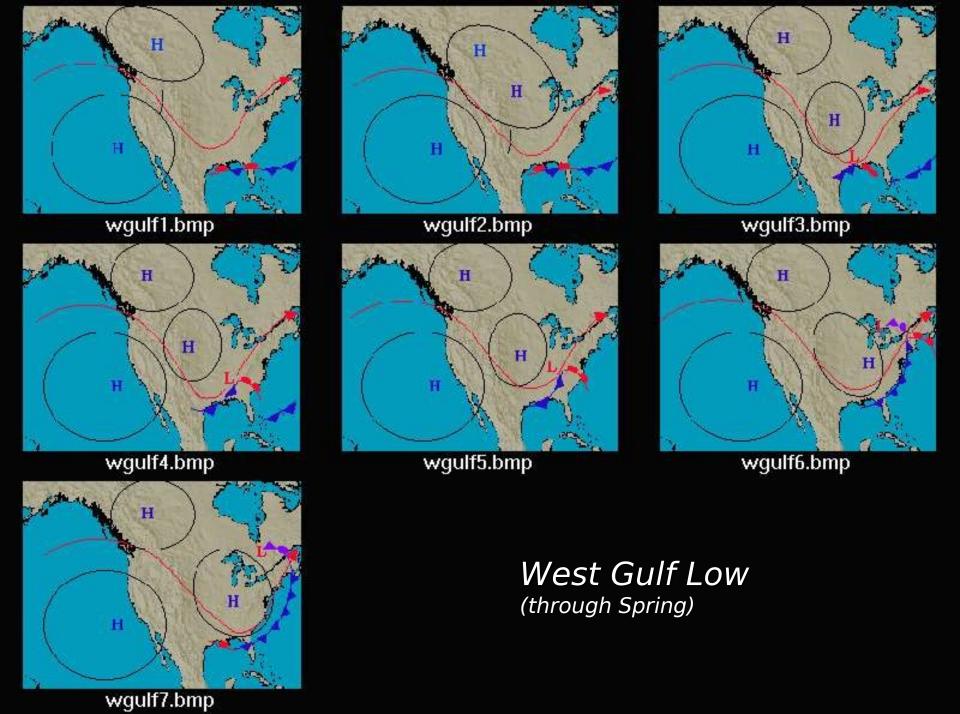
Colorado Low (Year around)

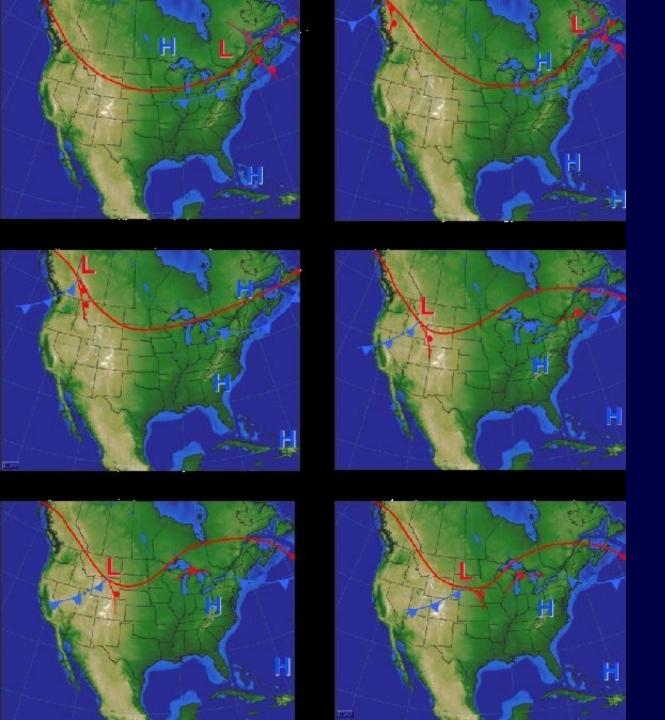


Hatteras Low (S. Atlantic Low) (Spring)

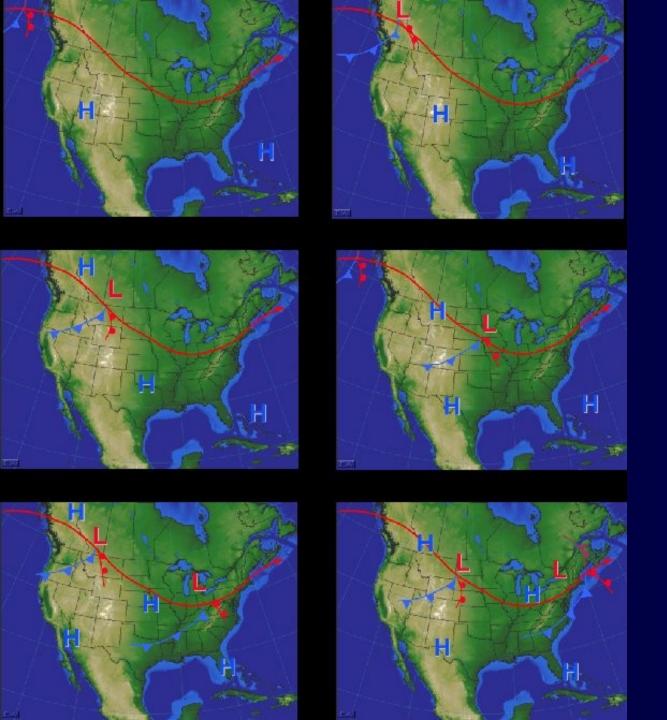


East Gulf Low (Spring)

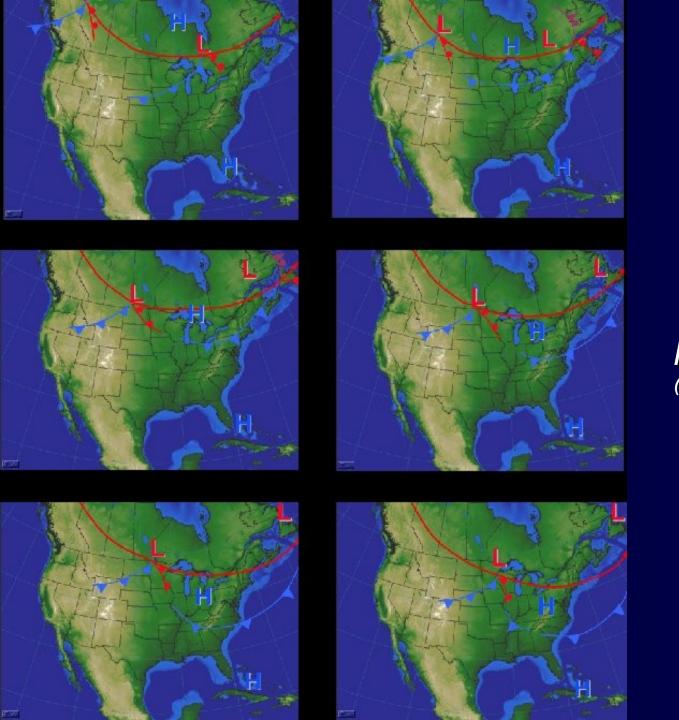




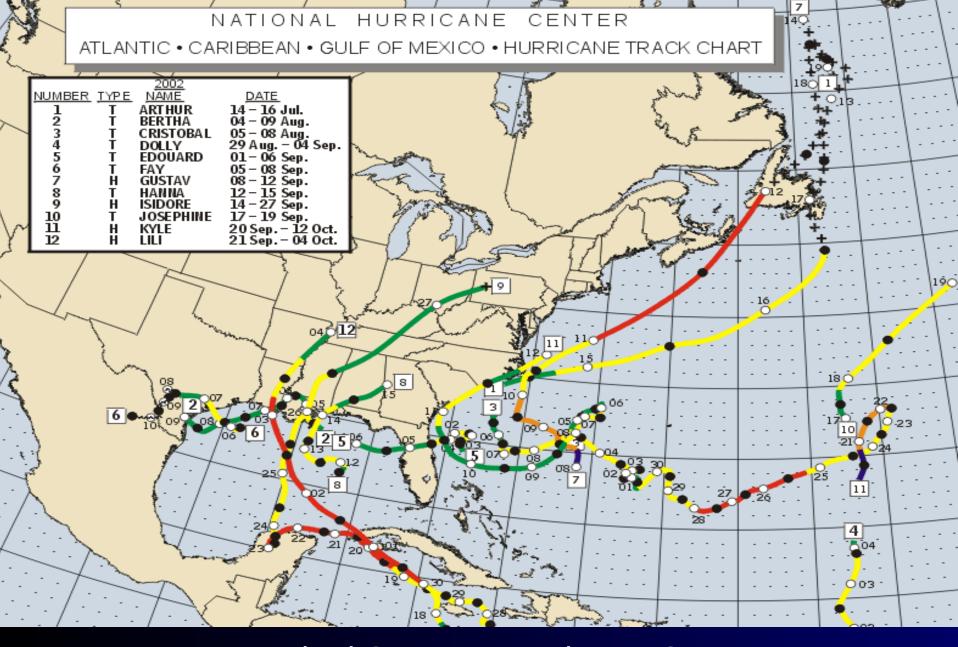
Burmuda High (Summer)



Alberta High (Spring/Early Summer)



Hudson Bay High (Year around)



Tropical Storm / Hurricane Season 1 Jun - 30 Nov

- Turbulence
 - Definitions
 - Types
 - Effects on aircraft (Fixed)

Turbulence

Definition
IRREGULAR MOVEMENTS OF AIR IN THE ATMOSPHERE

Low Level Wind Shear

Wind shear is a change in wind direction, wind speed, or both, along a given direction in space. The strongest wind shears are associated with abrupt changes in wind direction and/or speed over a short distance.

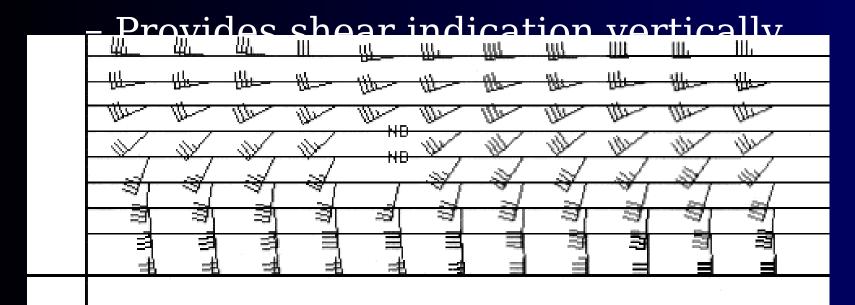
Low

level wind shear is particularly hazardous to aviation operations. It occurs so close to the surface that pilots often do not have enough time to

compensate for its effects. Wind shear is often associated with fronts, inversions, and thunderstorms

(Turbulence)

- VAD Wind Profile
 - Useful in keeping track of significant wind speed and direction change near the radar

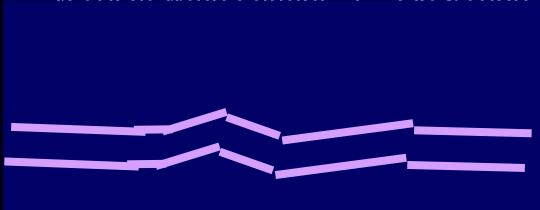


(Turbulence)

Light Turbulence

- Small changes in the aircraft attitude and/or altitude
- Small variations in air speed of 5 to 14 knots
- Vertical gust velocity is 5 to 19 feet per second
- Horizontal wind change <25 kts/90 miles



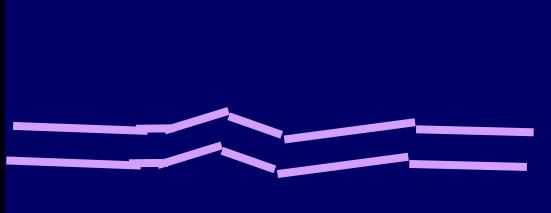


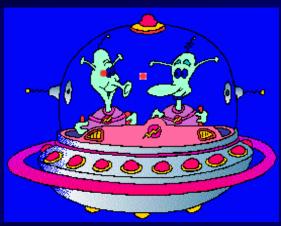


(Turbulence)

Moderate Turbulence

- Moderate changes in the aircraft attitude and/or altitude
- Small variations in air speed of 15 to 24 knots
- Vertical gust velocity is 20 to 30 feet per second
- Horizontal wind change 25 49 kts/90mi
- Vertical wind change 6 9 kts/1000'





(Turbulence)

Severe Turbulence

- Abrupt changes in attitude and/or altitude, Aircraft may be out of control for short periods of time
- Large variations in air speed \geq 25 knots
- Vertical gust velocity is 36-49 feet per second
- Horizontal wind change 50 89 kts/90mi
- Vertical wind change 10 -15 kts/1000'





(Turbulence)

• Extreme Turbulence

- Aircraft is tossed violently about and is practically impossible to control
- Structural damage possible
- Large variations in air speed \geq 25 knots
- Vertical gust velocity is \geq 50 feet per second
- Horizontal wind change >90 kts/90nm
- Vertical wind change >15 kts/1000'



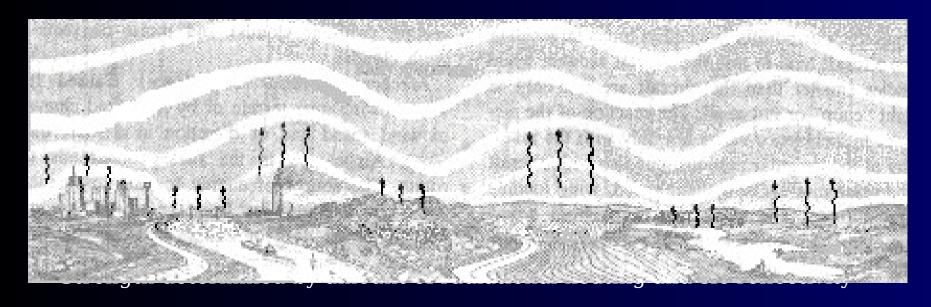


Seasonal Unique Hazards (Turbulence)

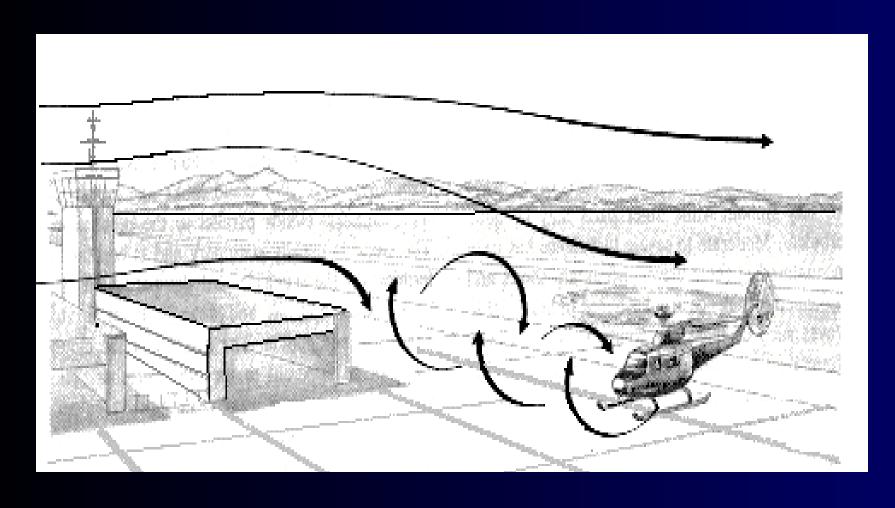
- Turbulence Categories
 - Convective or Thermal
 - Due primarily to surface heating
 - Mechanical (Most common in Winter for LFA)
 - Mechanical turbulence is caused by horizontal and vertical wind shear and is the result of pressure gradient differences, terrain obstructions, or frontal zone shear. There are three types of mechanical turbulence: Clear Air Turbulence (CAT), Mountain Wave (MV), and Wake Turbulence.

(Turbulence)

- Thermal
 - Warm air rising creates eddies and gusts which causes "rough air"

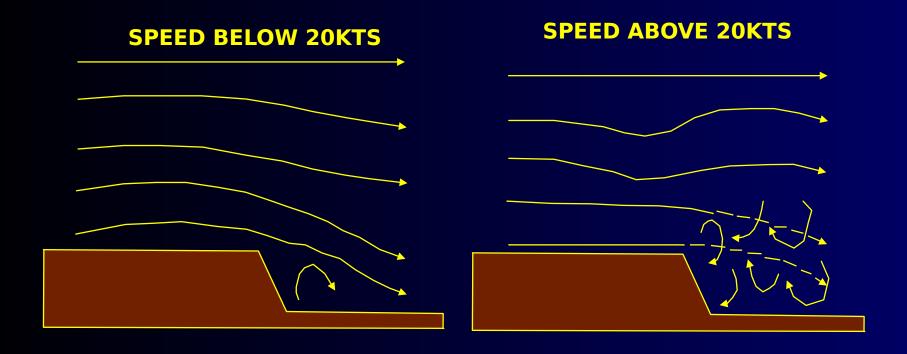


Turbulence (Mechanical)



Mechanical Turbulence

Terrain effects on wind flow



(Turbulence)

- Rotary Wing
 - Directly proportional to speed
 - Inversely proportional to weight
 - Inversely proportional to lift velocity (The faster you lift--the less the bump)
 - Directly proportional to the arc of the rotor blade (the bigger the blade the greater the turbulence)

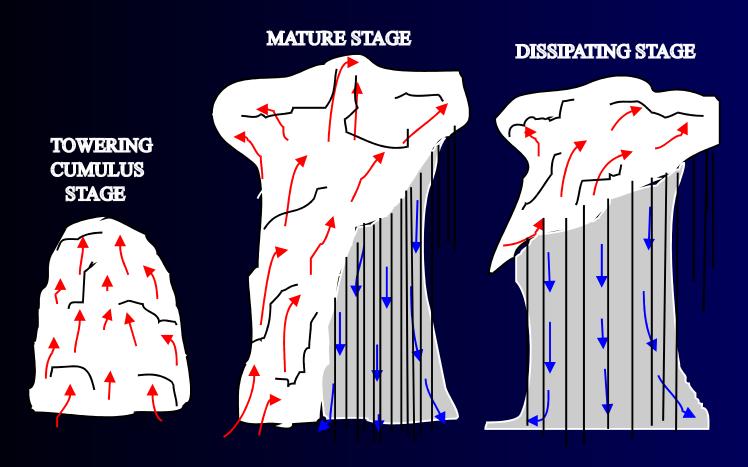
(Thunderstorms)



(Thunderstorm Causes)

- AIRMASS-MORE OR LESS RANDOMLY GENERATED BY
- SURFACE HEATING IN A MARITIME TROPICAL AIRMASS.
 - USUALLY FROM 1500L-1900L
 - GENERALLY SLOW MOVING AND NON-SEVERE
- MESOSCALE CONVECTIVE COMPLEX (NOCTURNAL)
- FRONTAL-EITHER IMBEDDED NEAR WARM FRONTS OR ALONG AND AHEAD OF COLD FRONTS.
- SQUALL LINES-OCCUR AHEAD OF FAST MOVING COLD FRONTS.

(Thunderstorm Stages)



(Thunderstorms Effects)

- SEVERE ICING/TURBULENCE
- HAIL
- MICROBURSTS
- GUSTY SURFACE WINDS
- FLASH FLOODS
- LLWS
- LIGHTNING

(Thunderstorms/Lightning)



(Thunderstorms/Lightning)

- MOST CASUALTIES OCCUR ON SUMMER AFTERNOONS
- AIR IS HEATED TO 50,000F, HOTTER THAN SUN'S SURFACE
- LIGHTNING HAS APPROXIMATELY A 2" DIAMETER
- LIGHTNING TRAVELS 100,000 TIMES FASTER THAN THE RESULTANT SHOCK WAVE (THUNDER), 90,000 MILES/SEC
- DISTANCE FROM A THUNDERSTORM CAN BE ESTIMATED BY MEASURING THE DIFFERENTIAL BETWEEN SIGHTAND SOUND (5 SECONDS PER MILE)
- MOST COMMON VICTIMS ARE BOATERS, SWIMMERS,
 GOLFERS, BIKERS, AND OUTDOOR PAYPHONE USERS.

Seasonal Unique Hazards

(Lightning Safety Tips)

- STAY INDOORS
- STAY OFF THE PHONE
- STAY OUT OF THE TUB
- IF CAUGHT OUTDOORS:
- AVOID TALL OBJECTS SUCH AS ISOLATED TREES!
 - ENSURE YOU'RE NOT THE HIGHEST THING AROUND
 - IF YOU FEEL HAIR ON BACK OF NECK RAISE UP,

ASSUME THE POSITION!

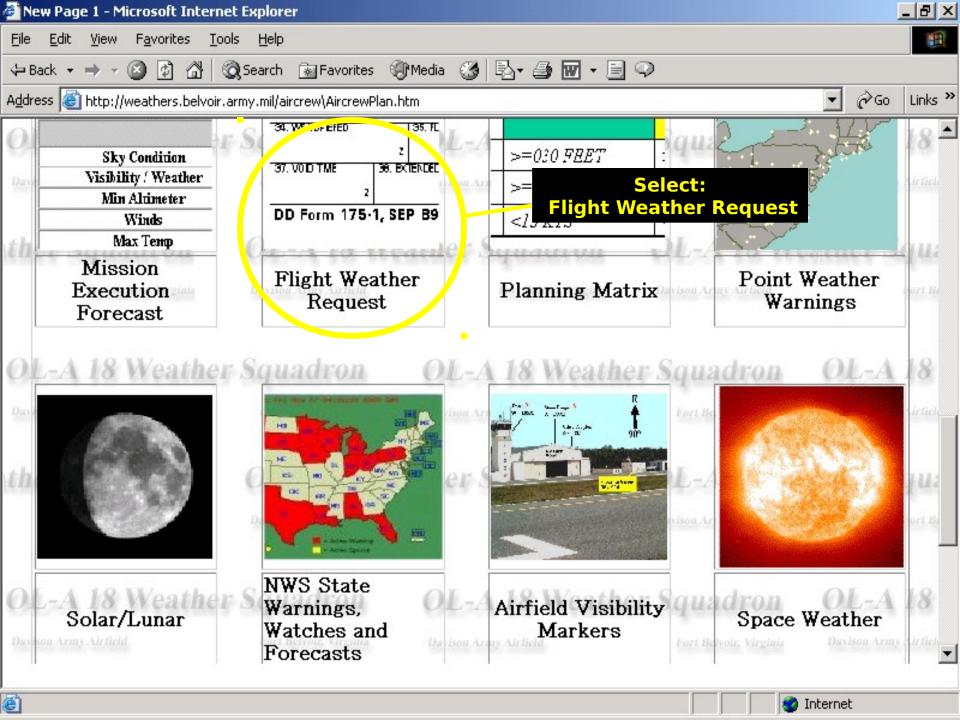
Weather Station Info

- Winter Hours:
 - 0530L 2130L (M-F) CLOSED HOILDAYS *Standby other times

Alternate briefing services (Scott AFB)
DSN 675-9755,
Fax DSN-4855,
Commercial 618-256-XXXX

Weather Station Info

- Web services are available for pre-flight planning purposes at: http://weathers.belvoir.army.mil
 - Select Aircrew Page
 - Will be prompted for login/password. Contact the weather station if you do not have this information.
- 175-1 briefings can be requested online from the 15th OWS through this page during non duty hours.
- The following slides will instruct you on how to fill out these requests.



Select State in left dropdown:

15th Operational Weather Squadron Aircrew Meteorologist Forecast Funnel Local Weather Links Change AOR Feedback

номе > AIRCREW > SETUP Northeast Conus 31 Jan

Home Request Briefing Edit Request Retrieve Briefing Mission Profiles

Request a Briefing

Use the forms below to either request a briefing by unit or by saved mission profile.

If you have a mission profile but you can not find it under your unit, please try selecting Transient/Other as your unit. If you find your under Transient/Other, please contact our Customer Liaison.





ext, select your unit:

Home Request Briefing Edit Request Retrieve Briefing Mission Profiles

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Fill out request and include all pertinent information. Be sure to include email address if the brief is to be emailed.

Part I -	Part I - Unit Information													
	Ft. Belvoir-RFC (OSACOM): Ft. Belvoir, VA													
Aircrev	w POC:	LFI AM Shuttle	*	Phone:	656-7026	656-7026								
Fax:		656-7572		E-Mail:										
Part II -	Aircraft Inform	nation												
Туре:		BE20	*	Tail Number:										
Call Si	gn:	Pat401		Either a Tail # <u>OR</u> call	sign is required									
Part III	- Mission Infor	mation												
Departure Day:		2/5/2003	* AUTO POPULATE	Departure Time (Z):	10:30		*							
Departure Point: KI		KDAA	*	Flight Level:	080	080								
	Destination Type		ICAO	Arrival Date			Time (Z)							
	Primary	KLFI	*	2/3/2003	* 1	11:10		*						
	Destination 🔽	KDAA		2/5/2003	T	12:00								
	Destination 🔽	KLFI		2/5/2003	<u>1</u>	13:20								
	Destination 🔽	KDAA		2/5/2003	T	1415								
	Alternate 🔽				T									
	Alternate 🔽				<u>T</u>									
	Alternate 🔽				<u>T</u>									
	Alternate 🔽				1									

Include any special AR, Route, or Drop Zone information:

Part IV - Air Refueling Tracks					
AR Track Name	Start Day T	Start Time	End Day T	End Time (Z)	Flight Level (MSL)
Part V - MOA Information					
MOA Name Part VI - Drop Zone Information	Start Day T	Start Time	End Day T	End Time (Z)	Flight Level (MSL)
Drop Zone Name	Drop Day	n n n	Drop Time (Z)		Altitude
Part VII - IR & VR Route Information	tion				
Route Name	Start Day (1)	Start Time	End Day	End Time (Z)	Flight Level (MSL)

Include any special requests in the remarks block. This is where you will place any requests for additional transmission, I.e. email and fax, etc.

Select brief time and primary delivery method.

Lastly, you may elect to save this request as a mission profile if it has not already been done and if it is a recurring mission.

Part VII - IR & VR Route Information											
Route Name	Start Day (1)	Start Time	End Day (T)	End Time (Z)	Flight Level (MSL)						
Part VIII - Additional Comments/Instructions											
Please fax to the primary number but send a courtesy fax to the base weather station 656-7314											
Brief Day: 2/5/2003 * * Brief Time (Z): 09:30 *											
Delivery Method: Solnternet Sole-Mail Sole Fax Sole Phone											
Save this req											

Submit Request

Reset Form

Verify data and select continue

Unit Info											
Unit:Ft. Belvoir-RFC (OSAC	OM)	POC: LFI	AM Shuttle	Phone:656-7026							
Fax: 656-7572		E-mail:									
Aircraft Info											
type: BE20		Tail #:		sign: Pat401							
Mission Info											
Depart Pt: KDAA	Flight Level: 080	Depart Da	ite: 2/5/2003	Depart Time: 10:30							
Type Primary Destination Destination Destination	<u>Icao</u> KLFI KDAA KLFI KDAA	2/5/. 2/5/. 2/5/.	r <u>al Date</u> 2003 2003 2003 2003 2003	<u>Arrival Time</u> 11:10 12:00 13:20 14:15							
AR Tracks											
Name No Trackes Entered	Flight Level	<u>Start Day</u>	<u>Start Time</u>	End Day	End Time						
MOAs											
Name No MOAs Entered	Flight Level	Start Day	Start Time	End Day	End Time						
Drop Zones											
No Drop Zones Entered	<u>Flight Level</u>	<u>Drop</u>) Day	<u>Drop Time</u>							
IR&VR Routes											
No Routes Entered	Flight Level	<u>Start Day</u>	Start Time	End Day	End Time						
Comments											
Please fax to the primary nu	ımber but send a cour	tesy fax to the bas	e weather station 6	56-7314							
Other											
Brief Date: 2/5/2003 Brief Time: 09:30 Delivery Method: Fax Profile: Not Saved as a Profile											

Continue

Print a copy of this page or write down the briefing ID for your records. This is your confirmation you submitted the brief

Home Request Briefing Edit Request Retrieve Briefing Mission Profiles

Request Submitted

Your briefing request has been submitted. Please note your briefing id.

Briefing Id: 31010316421800

Call Sign: Pat401

POC: LFI AM Shuttle

Brief Time: 2/5/2003 09:30Z

If necessary you may go back and edit your request for any changes that may occur. Select Edit Request and input your Briefing ID. Follow the above steps and edit those areas that need changed and submit again.

Home Request Briefing Edit Request Retrieve Briefing Mission Profiles

Edit Briefing Request

To edit a briefing request, please enter the briefing id you were given when you submitted your request.

If your briefing is not found, please make sure the id entered is correct. If the id entered is correct, your briefing may already be in progress and can no longer be modified from the web. Please contact our briefer at DSN: 576-9701/9755 or COM: (618)256-9701/9755 for assistance.

Enter Briefing ID:
Edit Request

Lastly, in the event your briefing does not arrive through requested means, you may retrieve the briefing by selecting Retrieve Briefing and input your Brief ID.

In the event you have any problems you may contact the briefer directly by calling the listed number below.

Home Request Briefing Edit Request Retrieve Briefing Mission Profiles

Retrieve Briefing

To retrieve a published briefing, please enter the briefing id you were given when you submitted your request.

If your briefing is not found, please make sure the id entered is correct. If your id is correct and your briefing is still not found, it may not yet be published. Please contact our briefer at DSN: 576-9701/9755 or COM: (618)256-9701/9755 for assistance.

Enter Briefing ID:									
Retrieve									

Space Weather Info

In addition to terrestrial weather, space weather plays a key role in the warfighters' ability to plan and conduct operations. Unlike terrestrial weather requirements, the operational needs of the warfighter (as they pertain to space weather) are not well documented, and may not be as well understood. To that end, the Air Force Weather Agency has taken many steps to provide products and training to better understand space weather and its potential effects on operations. Everything from GPS readings to HF communications and SATCOM may be effected during high solar activity.

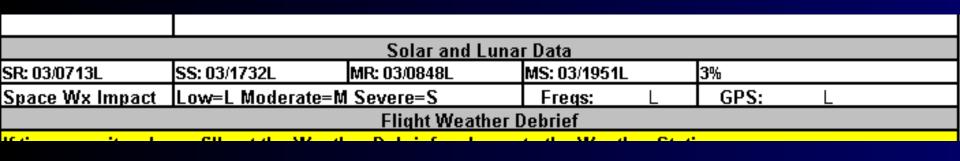
This will be a quick overview of the products OL-A, 18th WS, will provide on a routine basis. This overview will also include URL links to more in depth training material and available products currently in

use to support the warfighters. Specialized space weather support can be provided on request.

Space Weather is now provided on the new DI Blocks 15 and 16.

DARTH FURNITE AMERICAN DATA														
	PART II - ENROUTE & MISSION DATA													
14. FLT LEVEL/WINDS/TEMP SEE ATTACHED			15. 8	15. SPACE WEATHER					16. SOLAR/ LUNAR	LOCATION				
					NO IMPAC	T MARGI	NAL	SEVERE	BMNT Z					
				FREC	2					SR Z	ШR	z		
				GPS						ss z	шs	z		
				RAD						EENT Z	ILLUM	×		
17. CLOUDS AT FLT LEVEL 18. OBS					BSCURA	TION	SATFLTL	EVEL REST	'RIC'	TING VISIBIL	ITY			
	YES		NO		INANDOUT		YES		NO TYPE					

Space Weather is also provided on the Mission Forecast (MEF) in the Solar and Lunar Data by



Space Weather Info

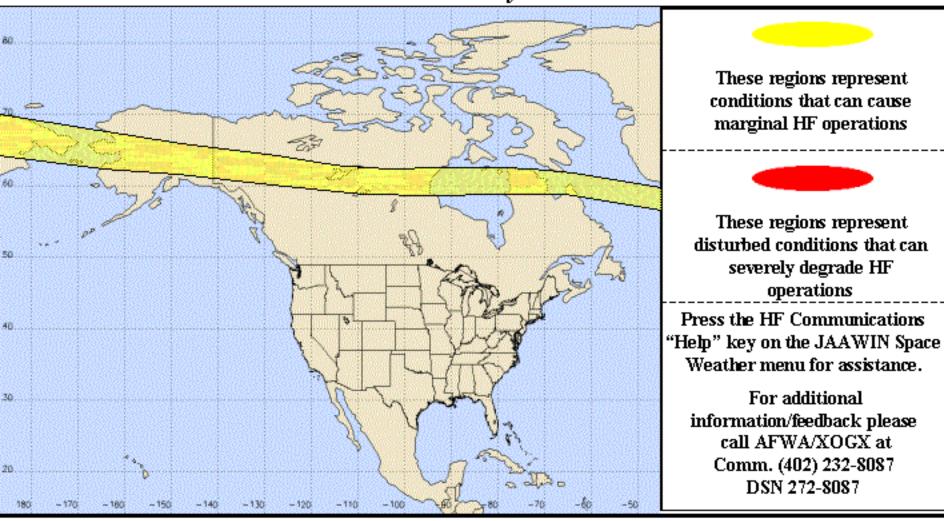
At this time we currently provide space weather informatic effects SATCOM (GPS, etc.) and HF Communications (free data used for these new blocks comes from products provides products may be obtained from AFWA's web site, or the MEF link on our Aircrew Page and selecting Daily Spainpact Graphics.

The following 3 slides will show you examples of the product. OL-A. For detailed information on these products and add Weather training please download and read the Space Weather, which describes these products in detail, located a

http://weathers.belvoir.army.mil/aircrew/Primer.doc

Ionospheric Conditions Impacting High Frequency (HF) Communications and Other HF Operations

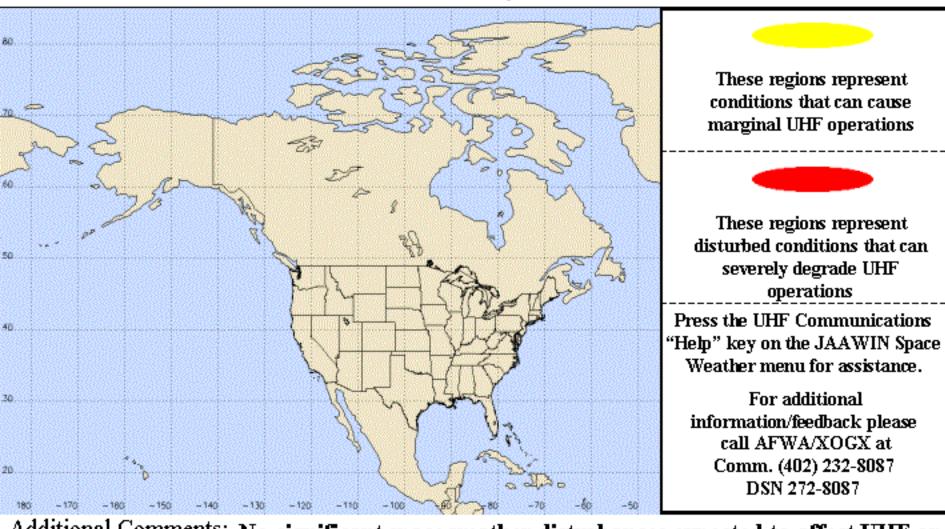
Forecast Valid: 03/1200Z - 03/1800Z February 03



Additional Comments:

Ionospheric Conditions Impacting UHF SATCOM Operations

Forecast Valid: 03/1200Z - 03/1800Z February 03

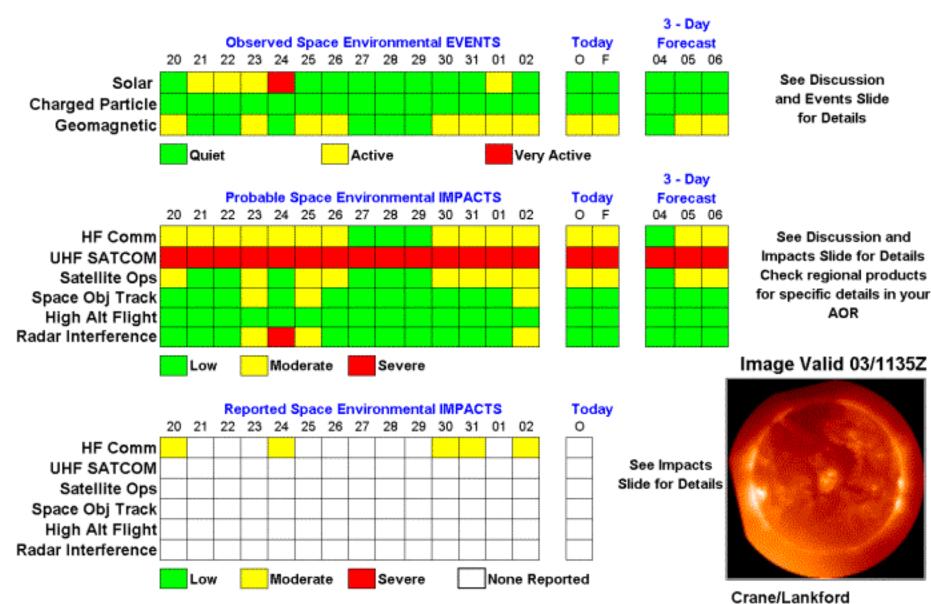


Additional Comments: No significant space weather disturbances expected to affect UHF or satellite communications.

UNCLASSIFIED

Space Environment Global Situational Awareness

Valid: 03/1200Z Feb 03



Prepared by AFWA/XOGX DSN 272-8087 COMM (402) 232-8087

UNCLASSIFIED

Issued 03/1200Z

Space Weather Info

Additional Space Weather Links

Space Weather Training and Requirements Module

(used for additional training and to help you determine if you have space weather requirements. This is where it all starts)

https://midway.peterson.af.mil/weather/module.html

Air Force Weather Agency Training Division

(This site covers all Air Force Weather training, but includes a good section on space weather.)

https://wwwmil.offutt.af.mil/afwadnt /Training_Products/Space%20Weather/space_weather.htm

Joint Air Force & Army Weather Information Network

(Main AFWA Space Weather page. Provides products, familiarization/training material, and links to other pertinent space weather sites.

https://www.afwin.afwa.af.mil/space.html

What can you do to help



Please use the links below to fill out the completion form either

online or by printing a blank copy and faxing. Please follow

instructions outlined on the forms. If the blank form will not open

in your browser, you may obtain a copy by contacting